

SCIENCE

FRIDAY, DECEMBER 9, 1887.

IN OUR ISSUE of Oct. 28 we called attention to the fact that a committee had been appointed by the New York Academy of Sciences to raise funds to erect a monument over the remains of Audubon, who now lies buried in the south-western portion of Trinity Cemetery, near 153d Street and North River. Two or three years ago some gentlemen who visited the cemetery noticed the name of Audubon on a vault which was then in much need of repair, and finding, on inquiry, that this was the burial-place of the great ornithologist, suggested the plan of having his remains removed to a more conspicuous position. On making proper representations to the authorities of the cemetery, they were met with great courtesy; and after some months, with the consent of the Audubon family, it was decided to change the position of the plot to a place which will be opposite the extension of Audubon Avenue when it is continued to 155th Street, as it probably will be. This plan was accepted by the Audubon family during the last summer, and it was then proposed to erect in the new plot, by national subscription, a monument worthy of the greatness of the man. After these arrangements had been completed, the plan was laid before the meeting of the American Association for the Advancement of Science in this city, but no action was taken. At the first meeting of the New York Academy of Sciences this fall, a committee was appointed to raise funds for the monument. Since the date of its appointment, this committee has been quietly at work. After organizing, it communicated with different scientific societies all over the country, from which the most enthusiastic replies have been received. It was decided by the committee, that, on account of the near advent of the election, it was unwise to do much active work at that time; but now that the election is over, the committee are actively at work, are preparing the designs for the monument, and wish to solicit subscriptions from all parts of the United States. The whole country has for years been justly proud of Audubon's work, which was received both at home and abroad with the greatest enthusiasm. It is considered one of the greatest treasures of any public or private library. Some of the copper-plates of this great work now hang in our museums, and are framed and hung like valuable pictures in the houses of patrons of the arts in this city. It is the founder of American ornithology that it is sought to honor, to whom natural history in this country is almost as much indebted as England is to White of Selborne. It is hoped that every one that loves nature will subscribe, and ask others to subscribe, to this fund. It is intended by the committee, as soon as the monument is ready, to have some public ceremonial worthy of the occasion at its unveiling in Trinity Cemetery, and in this way bring into further prominence the great services which Audubon has rendered to the scientific study of natural history in this country. Contributions, however small, may be sent to the treasurer, Dr. N. L. Britton, of the School of Mines of Columbia College.

IT IS CURIOUS to watch the different approaches made to the same question by various countries. There is now, as is well known, a very general movement throughout this country in favor of what is known as manual training in education. After much misapprehension and tedious explanation the leaders of this movement have finally managed to make the educational public understand that they advocate manual training mainly for its educational value, and only incidentally for the economic benefits which will

undoubtedly flow from it. In England, however, where a similar movement is gaining force, the point of view is almost exclusively the economic, and but little is heard of the educational value of manual training. The Englishman desires manual training to take the form of technical or trade instruction, in order that England's waning commercial supremacy may be restored and retained. It is very necessary, therefore, in following the English movement in favor of manual training, to understand that its arguments and its point of view are wholly at variance with those of the American movement to introduce manual training into the public schools. Indeed, Mr. William Mather, one of the best authorities in England on the subject, as well as one of the few Englishmen who thoroughly comprehend the American movement, has said that the English mind has not yet sufficiently advanced educationally to adopt the American view, and that the only sort of manual training which can be successfully advocated in England at present is that which will come under the head of technical education. The inaugural address delivered at University College, Liverpool, by Prof. Hele Shaw, and reported in a recent number of *Nature*, illustrates excellently what is said above. Professor Shaw began his address by calling attention to the vast and almost incredible change which the present century has witnessed in the industries of the world, and he emphasized the fact that a few years ago circumstances combined to make Great Britain the principal commercial and manufacturing country of the world. The artificial conditions which brought about this state of things could not and did not last. Foreign nations began to establish mills and work-shops of their own, and, what was of even greater importance, they recognized the necessity of spreading technical knowledge by all possible means. To accomplish this, technical schools instituted and supported by the state, at which instruction could be obtained free or at a merely nominal expense, were established by the more progressive countries. The result has been that during the past twenty years numbers of highly educated men have been sent out who were prepared, on becoming foremen, managers, or employers of labor, to take advantage of the latest discoveries and improvements in the various branches of industry, in other words, to use their brains with their hands. The eventual effect of this on England's industrial status could be safely predicted, and that it was disastrous the reports of the recent royal commissions on trade depression and on technical education conclusively prove. It must not be thought, however, that the English themselves are not alive to what is going on about them, and the importance of late assigned to the subject of technical education proves that they are looking in the right direction for the remedy. The National Association for the Promotion of Technical Education has on its roll of membership some of the foremost men of science, men of business, and men of literature in Great Britain. The special government bill which was introduced on this subject at the last session of Parliament is proof that official circles are alive to what is needed. Professor Shaw then asks what the term 'technical education' really means, and with a touch of humor says that one very general answer to the question is, "Something to meet the German competition." "This," he adds, "grotesque as it may seem, is much nearer the truth than most of the other definitions of technical education." Of these he quotes a number, and then proceeds to discuss the results attained by the Science and Art department during the past ten years. The other central agency, which has been at work for several years in promoting technical instruction, is the City and Guilds Institute of London, and he points out the very interesting and valuable results

which this institution has accomplished. "When it is considered," he continues, "what splendid technical training the workshops and manufactories of England have afforded, there will appear to be very good reasons why, originally, technical schools were not so extensively instituted in England as on the continent." The speaker pointed out that England was, taken as a whole, after all not in such a deplorable state with regard to technical education, and then described that education as of two kinds, general and special. "General technical education may be said to be that necessary in all large centres of population, being the preparation for such callings as engineering, architecture, medical science, and other professions which a certain percentage of the inhabitants will always follow, besides training of another kind suitable to the artisan class. Special technical education is that necessary in a locality where there are special industries, instances of which will readily suggest themselves." The remainder of the address was devoted to considering the educational work of Liverpool and its technical requirements. This brief abstract will suffice to show how diverse are the means of approach to the manual training problem which are being followed in England and in this country.

PHYSICAL TRAINING.

THE American Association for the Advancement of Physical Education held its third annual meeting in Brooklyn on Nov. 25, and was well attended. Prof. Edward Hitchcock of Amherst College presided. Papers were read by him, and also by E. H. Fallows of the Adelphi Academy. The title of the latter paper was 'Physical Training in Elementary Schools in the United States,' being an extract from the report of the Board of Health of New Hampshire. Dr. Edward Hitchcock, Jun., of Cornell University, read a paper on the uses of physical measurements to the individual. In the attempts to establish anthropometry on a scientific basis the weight of individuals was first taken as a standard, but this had to be abandoned, and he thought we could now say with a certain degree of exactness that human measures increase with the height. It is extremely difficult, if not indeed practically impossible, to secure the exact dimensions of any man. Especially is this so when it is attempted to obtain the measurements of the chest and shoulders. Six experts might examine the same individuals, and their measurements would probably all differ. The testing of lung capacity is very variable, some individuals giving results which are of value, while others do not use the thoracic muscles at all, but simply bring into play the muscles of the pharynx. Some foreign countries, recognizing the difficulties in the way of obtaining exact measurements of parts which were liable to vary, had adopted the length and breadth of the head, ear, foot, and finger, and the height of a man in the sitting position, as the best, making use of them in descriptions of criminals. Dr. Hitchcock thought that to determine the physical powers of an individual, good judgment on the part of the examiner was of great value. In fact, a good judgment without measurements he regarded as better than good measurements without judgment.

Dr. Savage, director of the Berkeley gymnasium, New York, and Dr. Sargent of Harvard University discussed Dr. Hitchcock's paper. The latter said that while some foreign nations had done more in obtaining and recording measurements of parts of the human body, the United States was far ahead in true anthropometry, that is, the measurement of the whole man; but this subject was still in its infancy, and it would be folly for the association to publish views which in the present inexact state of the science of anthropometry might and probably would be controverted in a short time. He did not think it was proper for an association which had had but two or three years' experience to express views which might be taken by the world at large as a basis for physical education. For his part he regarded it as a life-work, and he proposed to remain silent until he had arrived at results which he could swear by. Dr. Hitchcock of Amherst differed with Dr. Sargent. No science ever approached exactitude except through a long course of mistakes and subsequent corrections.

The next paper was on military training as an exercise, by Dr. J.

W. Seaver of Yale College. He took the ground that while military training was well adapted to the adult, it was not the best for the young. The element of sport or fun which characterized the active life of all animals in their early years should not be wanting in the exercise of the human young. General Molineux of Brooklyn, in the discussion of this paper, said that although colleges, by their well-equipped gymnasiums, had done much for their students, they had done but little for the masses. He hoped to see physical training adopted in the public schools, and urged the association to do all in its power to accomplish that object. He thought that military training even for the youth was very valuable, not only as a means of developing their strength but as fitting them for the defence of their country, a duty which they might be called upon to perform. John S. White, LL.D., head master of Berkeley School, New York, took similar ground with General Molineux, but believed that calisthenics and military drill should be combined in the development of youth. At the termination of the discussion the association adjourned.

AMERICAN PUBLIC HEALTH ASSOCIATION.¹

ONE of the most instructive papers read before the American Public Health Association at its recent meeting at Memphis was that of Dr. E. M. Hunt, Secretary of the State Board of Health of New Jersey. It is entitled 'The Prevention of Microphytic Diseases by Individual Prophylaxis.' It is so full of suggestion, and the subjects which it discusses are matters of such general interest, that we reproduce the paper *in toto*.

[PAPER BY DR. E. M. HUNT.]

During the last twenty-five years no subject has been more prominently before the students and practitioners of hygiene than the consideration of new methods, or new applications of old methods, for the prevention of disease.

This inquiry, to some extent, involves investigation into the specific entity of disease. But a still more hopeful direction of investigation is to find out what fertilizes it or makes it more likely to be severe, what sterilizes it or makes it more likely to be mild, or what will make the human system resistful to the sedation or propagation of the disease, so that it will not occur.

The first great discovery in this direction was that of the modifying influence of inoculation.

It could not have been merely the cathartic and the changed diet of a few days that reduced the mortality from inoculated small-pox to such a minimum. The prevalence of the custom was at once the certification of the terror of the caught disease and the innocence of the conferred or inoculated disease. Yet it was the same disease without any effort at attenuation.

It was the introduction of the virus into the skin or areolar tissue, instead of by inhalation, that seemed to result in modification. Its approach was through the periphery, instead of by a central and vital organ. The chief safety was in the fact that the involvement of the lungs and the secondary fever were avoided.

Somehow, by the metastasis or diversion or mode of attack, the system grew tolerant of the malady, and was able to throw it off with comparative harmlessness.

It has fallen to my lot frequently to see the same remarkable mitigation in the inoculation of cattle with the virus of contagious pleuro-pneumonia.

When the infection is conveyed by the breath, it seizes upon the lungs and pleura. Frequently, in three days after it is manifested, the spongy organ of two or three pounds has become so solidified with tenacious lymph that it has a weight of thirty pounds, and death is the speedy result.

But introduce this virus into the muscular tissue of an extremity and all symptoms are more gradual. There are local swelling, the throwing-out of lymph amid muscular tissue, and slight constitutional disturbance; but the lungs escape, and fatal cases are exceedingly rare. Not only this, but other animals will not contract the disease, and immunity is secured. These facts as to the effect of the different modes of conveyance of a disease have their practical bearings, and still invite investigation.

¹ Continued from *Science* of Dec. 2.

It was another wonderful fact when scurvy yielded to the preventive art. The great naval hospital at Haslar, England, had been built with special reference to the fearful inroads that this disease was making amid the British fleets. When, in 1796, Sir Gilbert Blane and other medical officers of the navy obtained the order that lime-juice be supplied to the seamen, the terror of that disease was taken away. Studying the facts by the history and peculiarities of that disease, we cannot dismiss it as a mere error of dietetics. It was not simply that fruits and fresh vegetables prevented the disease. It was a far-reaching lesson as to how diseases may be modified by medicines as well as by foods; how the presence of something administered may prevent a disease.

As to the next wonder of the preventive art, that of Jennerian vaccination, it is so often presented as to need only our passing recognition. Yet it is to be remembered that it is a subject not yet exhausted. Whether something of the modification is owing to the mode and place of introduction, whether it is a modified small-pox, whether it is attenuated virus and may be in different degrees of attenuation, and so differently protective, these and other questions are left over to be determined in this period when the microscope, the pathological, the chemical, and the biological laboratories have come to the aid of the clinician, and we can study and compare the accumulated facts.

The Pasteurian vaccination may stand next, if not in order of time, since Pasteur opened his Copenhagen address by profound acknowledgment of his indebtedness to Jenner as the great forefather of preventive medicine.

Here the mode and place of introduction, degree and permanency of effect, and the nature and cause of the so-called attenuation, are still before us with unanswered inquiry.

Next, while the doctrine of the prevention by isolation is old, yet new methods and new results, as to it, almost make it a new preventive art. Sea and land quarantines are modified, and ought to be. How far it is to be isolation of the person, or only isolation of the personal effects, is unsettled. What the forsaking of an infected house or ship will do, what the camping-out of all the well from a sick city will do, what isolation alone will do, as in Leicester, with small-pox, and what is the most perfect plan of organized systematized isolation,—all these are before every health-officer as large and most practical questions.

Next comes disinfection, in all it means by the new light of biology and the study of micro-organisms—whether it be the destruction of animal or vegetative parasitic life—of these as larvæ, as spores, or as sporeless plants, at any and all stages of existence and development; also what is meant by inhibiting or thwarting action, even when we do not destroy life; also what disinfectants can do with the surroundings in destroying the pabulum or nutrient media; also what these can do in the system, either to destroy the microbe which is setting up pernicious activity there, or in some way to deprive it of its food or limit its power.

For the present we confine ourselves to the last item. So soon as it became certain that many diseases depend upon, or are associated with, micro-organisms, the inquiry was in order, whether there could not be some method utilized and applied by which the presence or activity of these in the blood-tissues or secretions could be so interfered with as to prevent or mollify disease. Passing for the present certain facts as to septic and non-pathogenic organisms, which, introduced into the system, may of themselves, or by their ferments or alkaloids (ptomaines), cause disease, we confine our inquiry to the question whether it is possible to thwart the action of the specific or pathogenic micro-organisms in their attempt to invade or after they have invaded the system. We get some light or some analogy as to this from considering the life-history and behavior of these organisms outside the system. First of all, we find that pathogenic organisms are dependent for their growth on the presence of the suitable nourishing material. In this respect they are far more selective than the septic organisms, which “find in almost all animal and vegetable fluids the substances necessary for nutrition.” It is further found that there are substances which inhibit the growth of, or altogether destroy, these micro-organisms, such as corrosive sublimate, salicylic acid, etc. To do this they do not always need to be germicides.

Far short of destruction, such substances are capable of restrain-

ing the morbid action so far as to thwart their pernicious activity, which, in the case of an invading disease, is really the gravity of the disease.

Klein gives abundant evidences and references, on p. 208 of his book on ‘Micro-organisms and Disease,’ to show that “pathogenic micro-organisms are capable of suffering some modifications in their morphological and physiological behavior.” He adds, “Now, it is known of many micro-organisms, bound up with infectious diseases, that temperature, the medium in which they grow, and the presence or absence of certain chemical compounds, are capable of materially affecting them” (Klein, p. 207).

Inasmuch as this growth and multiplication are known to go on in the bodies of living animals, and to constitute the identity and gravity of many diseases, it is a radical and very essential and hopeful inquiry whether we may not, by some change in the animal, or in some of those chemical compounds referred to, either destroy the micro-organism or inhibit its activity.

It is very suggestive of the possibility of this to remind ourselves of the probable reason why some are unsusceptible to disease. Dr. Klein (p. 247) argues that it is because there is “something or other present in a particular tissue to which the latter owes its immunity.”

He infers, that, although this is “dependent upon the life of the tissue, it is not identical with any of the characters constituting its life.” He says, “The most feasible theory seems to me to be this, that the inhibiting power is due to the presence of a chemical substance produced by the living tissues.” This puts the body in such a condition that in the particular case, “the organisms cannot thrive and produce the disease.” It is true that he suggests that the germicide or inhibitive material is a product of living tissue. This is not necessarily so, or, if so, would not necessarily be a product of the living tissue of the human body.

If the non-activity of the organism, and so the non-occurrence of the disease, is owing to “the presence of a chemical substance” in the tissues or blood, it is a very pertinent and natural inquiry whether we can not and do not produce the same result by putting, and for a time sustaining in the system, certain “chemical substances,” which, so introduced, interfere with the processes sought to be set up, and which would constitute the disease.

The analogy is strengthened by the fact that chemical products are so much coming to be suspected or recognized as constituting the virus or specificity of diseases in which the micro-organisms are the initiative factors.

Still more, however, it behooves us to find out whether, either in chemical or laboratory experience, there has been any confirmation of such views. In clinical experience we have long had not only the fact that quinine will cure chills and fever, but that it is a substance which, introduced into the human system in advance, will prevent those processes which constitute the disease. So soon as it was made probable that the malarial diseases belong to the species or genera of microphytic diseases, so soon it seemed probable that the result was due to this inhibitive effect of the alkaloid. As a result of experiences with epidemics of diphtheria and scarlet-fever, so long ago as at our Chicago meeting in 1877 (see *American Public Health Association*, vol. iv. p. 348), I presented a paper on this mode of assisting and preventing pestilential diseases (see also two articles on the subject in *The Medical Record*, vol. ii. 1877).

The next year the subject was more fully presented in a paper read at the Richmond meeting.

In the intervening time Professor Cabell was so impressed by the facts presented, as to note it in his address before the American Medical Association in the spring of 1878. A reference to the paper of 1878 will show how fully this idea was insisted upon and illustrated. It was claimed that by the use of certain medicines we could prevent the sedation or interrupt the development of that which constituted the infection. Many of the facts in support of this view at that time were collated, and since then, from time to time, medical men have corroborated these views from their own experience.

It is of value that since then we have come into a knowledge of several other diseases as microphytic, and this has greatly fortified the position then taken.

Says L. Brunton, "Facts seem to point to ferments or enzymes as the agents by which the tissues are built up and pulled down in their constant change, which continues during life; and the action of drugs on these enzymes is becoming one of the most important questions of pharmacology" (see *American Public Health Association*, vol. vi. p. 103).

From time to time in the last five years the journals have contained records as to this possibility of individual prophylaxis. But all this was only the clinical experiences of physicians. Too often these are not accorded the same consideration as what are called crucial or laboratory experiments.

It has recently been necessary for Sir James Paget, as president of the Pathological Society of London, to contend that clinical observation is scientific, and that the sick-room is a laboratory with its crucial experiments, as real as those in which culture-experiments are instituted.

But now experimental tests have come directly to our aid in determining the effects of prophylactic remedies. Before this we knew that arsenic, potassium chloride, quinine, and excess of iron, etc., could be made constant for days and weeks in the blood by medication.

In 1884, under the direction of the Local Government Board of England, Dr. J. T. Cash instituted a series of experiments as to chemical disinfectants, and made report thereon. The object of the earlier investigations, recorded in a late report, was to inquire whether certain substances belonging to the aromatic series, when introduced into the body of a living animal, were capable of preventing the development of a particular virus within that animal. Later research was extended to a metallic salt (corrosive sublimate), which acts otherwise than aromatics with regard to albuminous bodies.

It was with this that the most decided result was secured. The result sought was to find "its power of resisting, in the condition in which they occur within the animal body, the multiplication of the active principle of the virus against which they are directed to such an extent that the virus is destroyed, or only reproduces itself so fully as to cause a modified or abortive attack of the disease in the animal body experimented on." The disease chosen for the experiments was anthrax, the severest test of all. The result of the first series of experiments was such as to show that the previous administration of corrosive sublimate may considerably modify the course of the anthrax disease in rabbits. The paper concludes by saying, "that, although these few experiments are not conclusive, they cannot fail to encourage the hope that we may yet succeed in creating with precision, within the animal economy, by the action of this and perhaps other drugs, a temporary condition of resistance (in this case seven weeks), which may so limit the activity of the anthrax virus that it will merely produce a passing, and at the same time protecting, disorder, instead of a fatal disease."

The next year (1885) Dr. Cash made to the Local Government Board a further report on mercury as a means of prophylaxis to anthrax. In this he says, "I have followed up the investigation of the prophylactic action of the perchloride still further, and the favorable opinion I was before led to entertain of its efficacy has been abundantly confirmed."

Dr. Klein has also satisfied himself of the restraining powers of the perchloride of mercury. Tomassi-Crudelli and others claim that arsenic has the same control as a preventive of malaria. These results may be taken as a confirmation of the clinical evidence given, and of the view we long since expressed as to the coming importance of various allied modes of prophylaxis in the prevention of various communicable diseases.

Heretofore we have mentioned some other prophylactics which we believe to have been effectual in preventing or mitigating some of the parasitic diseases. With this new evidence, I believe the time has come for a thorough testing, both by the practitioner and the biological investigator, of this new method of preventing and controlling disease. There are now many who believe that the real action of some of our most successful remedies is just this: the mitigation or prevention of a microphytic disease does not necessarily mean the destruction of the organism, but its inhibition *in loco*, or the modification of its chemical action on the tissues or of its products so as to render it harmless. It is a part of that anti-

septic medication which Professors Yeo and Brunton, and many others, recognize as steadily gaining ground for approval.

If, in an individual case of exposure, or an outbreak in a family or a neighborhood, this kind of prophylactic treatment is available, it is easy to forecast the wonderful beneficence of the result.

If, for instance, in an outbreak of diphtheria in a family or in a neighborhood, we can put all persons exposed to it for a few days upon a prophylactic treatment, or if in the first outbreak of cholera in a locality all exposed persons can be rapidly brought under the inhibitive effect of a prophylactic administered promptly and continuously, we will have in our possession a mode for the limitation or prevention of epidemics far more likely to have practical application than any system which involves the cutting of the skin, or the introduction in any form of the actual virus of the disease. At any rate, with two such modes of defence at hand, we might hopefully expect to substitute the word 'sporadic' for 'epidemic,' and to bring many a vagrant pestilence within the range of our control.

The present age of advancing medical art, will be rendered still more notable if it can be found that simple and active medication, on the outbreak of any communicable disease, will protect all those exposed thereto from contagion, or so modify its effect as to make the attack benign.

THE ALASKAN SOCIETY OF SITKA.

IT seems that the opening-up of Alaska to tourists is to result in some real benefits to science. An exceptionally intelligent and influential body of visitors appears to have visited the Territory during the past summer; and in the last issues of the *Alaskan* and the *North Star*, both of which are published at Sitka, are to be found the practical results of the presence of the body of visitors referred to. The *North Star* states that the training-school at Sitka particularly interested the tourists, and their interest seems to have taken a practical form. In this paper's account of the visit we read that at the instigation of President Butler, of the College for the Training of Teachers in New York City, and under his leadership, a large subscription was made for the purpose of equipping the kindergarten and the wood-working departments of the training-school. The list of subscribers is printed in full in the Alaska papers, and it contains the names of many prominent persons in the educational, political, and business worlds.

The same visitors were very much impressed with the necessity of taking steps to preserve information concerning the folk-lore and arts of the native Alaskan population. After leaving Sitka, Presidents Gilman and Butler were appointed a committee to draw up a constitution for a society which should have for its object the collection and preservation of such information. This constitution was drawn up, and signed by most of the visitors, and was then submitted to the residents of Sitka, who a few weeks ago called a public meeting, and proceeded to organize a society, which is to be known as the Alaskan Society of Sitka. The constitution as adopted states that the purpose of the society is to collect and preserve information in regard to the arts, history, language, religion, and folk-lore of the native population of Alaska, and also in regard to the structure, climate, mineral resources, fisheries, flora, and fauna of the country, and in brief to observe, collect, record, and publish facts in regard to the entire Territory, continental and insular.

The members of the society are the following founders, and such others as may be elected to membership from time to time. The founders are Pres. D. C. Gilman of Baltimore, Pres. Nicholas Murray Butler of New York, Senator C. B. Farwell of Chicago, Edwin H. Abbott, Esq., of Milwaukee, Prof. Louis Dyer of Cambridge, Prof. A. V. Young of Evanston, Ill., Thomas Hill, Esq., of San Francisco, and Elliot F. Shepard, Esq., and John B. Pine, of New York.

Resident members are to be chosen from the residents of Sitka who by their tastes, studies, or pursuits are qualified to promote the objects of the association. Corresponding members are to be chosen from those interested in the object of the society in all parts of Alaska, and from those officers who have been stationed in the Territory. Honorary members are to be chosen from those who have in any way distinguished themselves in promoting the study of Alaskan geography, natural history, ethnography, or other branches.

of science. An annual report is to be made, and scientific papers may be published from time to time in the name of the society, after they have obtained the approval of a committee of scientists to be designated by the directors.

It is also intended to establish a museum at Sitka in which a large portion of the material to be collected by the society can be preserved. It is doubtful if any of our Territories possesses greater geographical and ethnographical interest than Alaska, and we trust that the Alaskan Society of Sitka will make the best use of its opportunities, and collect material which will be invaluable for scientific purposes.

So little is generally known in the United States concerning the meteorology of Alaska, that it will be of interest to read the summary of the report of the Signal Service officer stationed at Sitka, for the month of September last. The highest barometer for the month was 30.38, and the lowest 29.26. The monthly range of the barometer was 1.12. The mean temperature was 57°, the highest point reached being 60°.5 and the lowest 36°.5. The least daily range of temperature was 5°.5, and the mean daily range 11°.6. The mean daily dew-point was 45.5, and the mean daily relative humidity 80.7. The total movement of the wind during the month was 6,030 miles, the highest velocity reached being 46. The total precipitation for the month was 10.57 inches, and on 20 days .01 of an inch or more of rain fell. The number of clear days during the month was 5, of fair days 8, and of cloudy days 17. On three days light frost occurred.

HEALTH MATTERS.

The Corset.

DR. ROBERT L. DICKINSON, lecturer on obstetrics at the Long Island College Hospital, has prepared a very elaborate paper on the corset, discussing from a scientific standpoint the questions of pressure and displacement caused by it. This paper was read before the Brooklyn Pathological Society, where it excited great interest and discussion. It has been published in full, with seventeen figures, all of which were drawn by the author of the paper, illustrating the effects of corset-pressure on the chest and abdomen and their contained organs, in the *New York Medical Journal* of Nov. 5. Dr. Dickinson says: "Ridicule, argument and invective have been freely expended upon the artificial small waist since the days of Martial and Galen. Yet the habit of corset-wearing has received little systematic study, and men's opinions are widely at variance. We frequently meet with the statement that corset-wearing works great injury; we discover a catalogue of five and ninety different diseases and disorders due to tight lacing; we find Bouvier, who has written the elaborate and interesting history of this article of dress, vigorously asserting that 'the modern corset, moderately tightened, is without appreciable influence on the health of the healthy woman;' and we encounter all shades of opinion between these extremes. But unsupported assertion is poor evidence, although a general impression must carry some weight. To obtain clear perceptions of the action of the corset, I have endeavored to measure the amount of pressure it exerts, to ascertain the distribution of the pressure, and to determine the displacements resulting therefrom, studying the subject with as little bias as possible, stating bald facts, and rarely expressing opinions."

The first tests which Dr. Dickinson applied were to determine the external pressure by the manometer; and as a result he gives a table of the various pressures within the body, as that of the blood and of the expiratory force of the lungs, when compared with the pressure exerted by the corset.

In reference to the words 'tight' and 'loose' as applied to corsets, the author says these words need to be defined. They lack precision, but are necessary. We cannot determine any limit of contraction in inches as the dividing-line, since in certain cases an inch and a half lessening of waist-measure with one woman will cause more pressure and more distress than five inches in another. The guide must be the patient's sensations, when we can trust her testimony, and signs that are readily appreciated, such as the restricted respiration and movement, evident discomfort when the corset is first hooked, flushing of the face in a warm room, and the

indentations in the skin after removal of the corset. Appearance goes for nothing: a large bust and wide hips or shoulders give an impression of slenderness in the waist which may be entirely deceitful. The least pressure he has estimated from a corset is twenty-one pounds: the greatest pressure is eighty-eight pounds. Within the half-minute that follows any exertion, such as rising, lying down, turning over, or straining, the mercury in the manometer rises from a half-inch to an inch and a half, then gradually falls to its steady level. On taking off a corset, one often observes that if the circumference of the waist is taken at once, and again a few minutes later, an increase of about an inch will have occurred. Six inches difference between the circumference of the waist over the corset and the waist with the corset removed is the greatest difference which he has measured. Five and a half and five he has met with once each. In the woman who wears no corsets the many layers of bands about the waist, on which heavy skirts drag, are sufficient to cause considerable constriction, as Dr. Mosher states. The thoracic cavity suffers less diminution in size and alteration in shape from corset-wearing than the abdominal. The principal constricting effect is exerted below the fifth rib. The inferior edge of the lung is compressed, and its ability to distend the lower part of the pleural cavity seriously crippled. Compensation in part is effected by the tendency of the corset, when firmly adjusted, to raise the shoulders, forcing the upper lobes to do the breathing, as Sibson has proved, raising the thoracic, or five upper ribs, widening the interspaces (also a constant condition in the female), and in this way expanding the highest part of the conical thoracic cavity. Freer play of the apices in women who wear corsets would lead one to expect consolidation at these points to be relatively less frequent than in men, while affections at the base should be more commonly met with. An increased tendency to emphysema of the upper lobes might also be anticipated.

The author raises this interesting question, May the peculiar character of the respiration in women be attributed to the use of corsets? Two observers who are especially qualified to testify have stated the case very forcibly. Sibson says, "In the adult female the form of the chest and abdomen and the respiratory movements are often undoubtedly modified by tight lacing. The form of the chest and the respiratory movements do not differ perceptibly in girls and boys below the age of ten. Although the form of the chest remains nearly the same until the age of twelve, the abdominal movement is then somewhat less, and the thoracic somewhat greater, in girls than boys. At this age and earlier, stays are worn, and, though they do not compress the body materially, yet they restrain the free expansion of the lower ribs during free exercise. After the age of fourteen the form of the chest and the respiratory movements differ materially in females and males. I think it probable that in females, even if they wore no stays, the thoracic respiration would be relatively greater, and the diaphragmatic less, than in man; but this is only surmise. Delicate men," he says further, "approximate to the female thoracic breathing; vigorous women, to the male abdominal breathing; and long-distance runners have the least thoracic breathing of all men (in the quiescent condition). The diaphragm would seem, therefore, to be a muscle capable of developing to meet increased demands as much as any other that the athlete strengthens."

Walshe says, "The agricultural woman, who knows not stays, breathes more like a man than the town female. Besides, during sleep the conditions of pectoral and ventral action of the female are much less strikingly different from those in the male than in the waking state: the waist is relieved for a time from constriction. And, further, the male and female dog breathe almost exactly alike, as do the horse and mare: the action is abdominal and lower costal."

Dr. Dickinson calls attention to the observations of Dr. Mays of Philadelphia, who has recently studied the respiratory movements of Indian girls in the Lincoln Institution, and whose results have been referred to in *Science*. These girls had always worn loose clothing. They ranged between ten and twenty years of age. Tracings from their costal and abdominal respiratory movements showed a very close analogy to those of the civilized male, and that, "so far as the Indian is concerned, the abdominal is the original type of respiration in both male and female, and that the costal type in

the civilized female is developed through the constricting influence of dress around the abdomen. This is markedly shown in the greater prominence of the costal movements in those girls who were either one-half or three-fourths white, and who were hence dominated to a greater or less extent by the influence of civilized blood. . . . It is also evident that the costal type of respiration in the civilized female is not due to the influence of gestation."

Long-continued compression, by the corset, of the wall of the abdomen in the epigastric and hypochondriac regions, gradually brings about a thinning of its adipose layer. Below the ring of constriction the fat accumulates. The woman who abhors 'a stomach' yet adopts the most effective means of cultivating one. Flabby, old, or obese persons are especially prone to pile up panniculus adiposus below the navel. Many stout young men in good condition have been examined, and not one has been found in whom this tendency is evident. On the contrary, the fatty layer above the umbilicus is usually thicker than that below it. These men wear suspenders. In eleven healthy women below thirty who have been in the habit of wearing corsets (of varying degrees of tightness) the fat below the navel has always been found to be more than twice as thick as that above, while one to three is no uncommon ratio. That this is not normal is proved by the fact that in two teachers of gymnastics measured for me by Dr. Mosher the fatty layer was thicker above. With a corset that is 'quite tight,' but not so tight as the patient "could bear it, as in a new dress or at a ball," the displacement of the uterus is a third of an inch. The distance seems insignificant, and may only be considered of importance in view of the following facts: 1st, That this is almost the deepest position to which the structures can be forced by straining down; 2d, That the long-continued action of the depressing force is exerted during the period of growth; 3d, In view of the results likely to ensue in case of weakened and enfeebled supports, in case of increased size and weight of the uterus (normally present during menstruation), and in case of incipient displacement; it naturally follows, 4th, That this forcing downward is sufficient to render the uterine supports tense (be they ligament, 'column,' or pelvic surroundings *in toto*), and that in their taut condition any extra or added stress, like deep breathing, or exertion, or bending, might well be enough to each time slightly overstrain these stretched supports. Slowly and steadily as this force acts, yielding must in time occur. In fact, Engel states that in every one of thirty autopsies in which evidences of tight lacing were found, prolapsus of the uterus was present in some degree, except where adhesions had prevented it. Will not this account in part for the uterine troubles of women supposed to be due to many of their sedentary occupations, such as sewing-machine work? The man bending forward relaxes his abdominal wall, and enormously lowers his intra-abdominal pressure by so doing (Schatz), but the corseted female, who writes or sews, produces the opposite effect. The earlier corsets are worn, the more the liver would be affected, since it is proportionately much larger in the child than in the adult. Previous to puberty its weight may be as much as one-thirtieth, or even one-twentieth, of that of the entire body: in the adult it averages one-fortieth. "The practice of tight lacing," says Murchison, "may cause displacements and malformations of the liver, which may simulate enlargement, and which are of considerable importance in diagnosis. Tight lacing may act on the liver in three ways,—according to the situation, the tightness, and the duration of the constricting cause. (a) The liver may be displaced upward or downward, according as the pressure is applied below or above. The precise situation where the pressure is applied will vary with the prevailing fashion of dress; but most commonly in this country the displacement is downward, and this may be to such an extent that the lower margin reaches the ilium, and the liver appears to fill up the whole of the right side and front of the abdomen. [Frerichs and other writers speak of this amount of change in location]. (b) In consequence of lateral compression the liver may be elongated in its vertical diameter so that a larger portion of it is brought into apposition with the abdominal and thoracic walls. This is a very common result of tight lacing. (c) When the pressure is exerted by a tight cord, it may produce deep fissures in the substance of the liver, as the result of which, portions of the organ may be more or less detached, and may even be felt as movable tumors through

the abdominal parietes. Apparent enlargements of the liver from tight lacing are far more common than is generally believed."

If, from the testimony of these five observers,—Braun, Corbin, Engel, Frerichs, and Murchison,—the extreme mobility of the liver has been proved, although we grant that these extremes result from tight lacing, are we not justified in believing that even a loosely adjusted corset must definitely displace so mobile an organ? The difference between the loosest corset and the tightest is less than might be imagined. Dr. Dickinson has not been able to double the pressure on requesting a patient to lace her loose corset to the utmost she could bear.

Engel found the stomach displaced in the following remarkable manner. It was shoved to the left. Its long axis, from a horizontal or oblique direction, was changed to a vertical, so that the lesser curvature ran down directly to the left of the spinal column. The pyloric end was depressed as far as the fourth lumbar vertebra. Constriction not unlike the liver-furrow was occasionally met with, but without pathological changes in the walls. The pancreas may be dragged down to a perpendicular position on the face of the vertebral column, reaching down to the promontory. These were extreme cases, of course.

A few of the most palpable changes brought about by corset-pressure have thus been briefly described. There are many others as much more important as they are more subtle and difficult of proof, such as the disturbances of abdominal circulation, the effect on digestion, the limitation of exercise, and the slowly increasing action on the general health.

The conclusions reached by the author of this interesting paper, are: 1. The maximum pressure at any one point was 1.625 pound to the square inch. This was during inspiration. The maximum in quiet breathing was over the sixth and seventh cartilages, and was 0.625 of a pound. 2. The estimated total pressure of the corset varies between thirty and eighty pounds,—in a loose corset about thirty-five pounds, in a tight corset sixty-five pounds. 3. Within half a minute after hooking the corset, such an adjustment occurs that a distinct fall in pressure results. 4. The circumference of the waist is no criterion of tightness. The difference between the waist-measure with and without corsets gives no direct clew either to the number of pounds pressure or to the diminution in vital capacity. Relaxation and habit seem to affect these factors largely. 5. The capacity for expansion of the chest was found to be restricted one-fifth when the corset was on. 6. The thoracic character of the breathing in women is largely due to corset-wearing. 7. The thoracic cavity is less affected by the corset than the abdominal. 8. The abdominal wall is thinned and weakened by the pressure of stays. 9. The liver suffers more direct pressure, and is more frequently displaced, than any other organ. 10. The pelvic floor is bulged downward by tight lacing one-third of an inch (0.9 cm).

BOOK-REVIEWS.

The Study of History in American Colleges and Universities. By HERBERT B. ADAMS, Ph.D. Washington, Government. 8°.

The Study of History in England and Scotland. By PAUL FREDERICQ. Baltimore, Johns Hopkins University. 8°.

By a pleasant coincidence these two volumes reach us together, and they have a great and reciprocal interest. When Dr. Adams comes to look over the present series of his Studies, we believe that he will find it the most interesting, and perhaps the most valuable, of all. It will be remembered, that, after half of the series had been devoted to studies of local government, a pleasant essay on a recondite subject in the political history of the United States was introduced, and that this was followed by Dr. Adams's own contribution on the literature of charities. The present paper, which is translated from the French by Miss Henrietta Leonard, is the report on the study of history in England and Scotland, which was prepared by Professor Fredericq at the invitation of the Belgian minister of public instruction. The report is very complete, and the author seems to have spared no pains to gather all the information available. Courses of study and examination-papers have been drawn upon *ad libitum*.

The author finds that the "study of history in Scotland" is something which does not exist. He says frankly that "history is in reality excluded from the curriculum of Scottish universities." At Aberdeen and St. Andrew's it is not taught at all, except when some historical information is necessarily imparted in the course of instruction in literature. He is hopeful, however, that a new act of Parliament will remedy this glaring defect, and afford history at least a decent recognition in the land of Robertson, Walter Scott, and Carlyle.

With Cambridge and Oxford, Professor Fredericq was very much impressed, and he grows quite enthusiastic over the system of fellowships which permits men like Max Müller and Mr. S. R. Gardiner to secure an academic income while devoting their lives, not to teaching, but to advancing the cause of science. The historical instruction at the two universities is outlined for us by the author, and we learn exactly what courses each professor and fellow gives, and how he gives them. The description of Professor Seeley as "a master whose first care is to make his pupils think for themselves," is a very pleasant one, and his adaptation of the German *Seminar* method is highly praised. Mr. Oscar Browning, well known in this country for his pedagogical writing, also comes in for a special word of praise.

At Oxford it was found that the programme of the historical instruction was more grandiloquent than the instruction itself justified. The lecturers are referred to as generally restricting themselves to an elementary style of teaching, and as not using any of the scientific equipment on which the continental student depends so much. Professor Fredericq notes that "the remarkable development in historical instruction that has taken place at Oxford since 1870, and at Cambridge since 1875, leads one to think that the practical course will soon be felt a necessary complement to the already brilliant theoretical course." The corps of instructors at both universities is ample; and, when modern methods and *quellenstudie* shall have replaced much of the present antiquated instruction, then, we are led to believe by the perusal of this essay, little else can be asked for.

Dr. Adams's paper on the study of history in American colleges and universities is quite as painstaking and far more comprehensive a study than that of Professor Fredericq. The substance of some of the chapters has previously appeared as articles in *Education*, but they are now reproduced with many additions. Dr. Adams traces the study of history at Harvard from its foundation up to the preparation of Mr. Winsor's 'Narrative and Critical History of America,' and at Yale from the seventeenth century to the foundation of the courses now given by Professors Wheeler and Dexter. To Columbia College the writer awards the honor of being the first institution in America to recognize history as worthy of a professorial chair. His sketch of the historical teaching at Columbia, which embraces the work of Vardill, Anthon, McVickar, Lieber, and Burgess, is in many respects the most interesting in the volume, and to it a very appreciative account of the School of Political Science is added. The University of Michigan and Cornell receive separate and generous treatment. The chapter on the Johns Hopkins University is a slightly revised reprint of Dr. Adams's earlier paper on the subject. We were very much interested in reading of the excellent instruction being given in the colleges for women, particularly at Wellesley. The paper concludes with an extract from Mr. Carroll D. Wright's impressive address before the Economic and Historical Associations at Cambridge in May last, and some statistical tables.

Read in connection with each other and together with Professor Fredericq's articles on the teaching of history in Germany and France, published some little time ago in the *Revue Internationale de l'Enseignement*, these pamphlets afford us the data for determining with some approach to exactness the comparative value of the historical instruction now being given at the world's great colleges and universities. We find advance everywhere, — promising, hopeful advance. The spirit of Savigny, Ranke, and Draysen is abroad; and the work of Freeman and Seeley in England, and of Burgess, Emerton, Adams, and Channing in this country, is in the right direction, and productive of excellent results. But the next generation will be even better able than our own to appreciate what the modern method of studying and teaching history really means.

The Family: An Historical and Social Study. By CHARLES FRANKLIN THWING and CARRIE F. BUTLER THWING. Boston, Lee & Shepard. 8°.

BOOKS on sociology increase in number and interest. The one under notice is indeed a very good summary upon the subject in its historical, social, and moral aspects; but it gives no hint of a definite purpose other than can be ascertained by reading it. It is without a preface, — an omission which we think a defect in so important a discussion.

The first chapter treats of the prehistoric family, and examines this institution in the Semitic and Aryan races, as a type of different social structures. "The Semitic family is patriarchal, the Aryan is individual: one makes the father the unit, the other makes the family itself the unit; one is polygamous, in the other monogamy prevails; one gives all duties to women, the other gives some duties to men, and some rights to women. The patriarchal Semitic system is the germ of monarchy; the Aryan family is the beginning of the political commonwealth." The patriarchal system is shown to prevail among the Greeks, Romans, and Hebrews, with the strict responsibility of woman for fidelity, and considerable laxity in tolerating male infidelity. Then Christianity modified this system. Two characteristics mark its influence and improvement upon previous conceptions of the family: monogamy and mutual chastity. The same rule of purity was applied to the husband as to the wife, which had been limited previously to the latter. The middle ages are considered to mark a conflict between the Roman patriarchal system, and the republican conception of the family in northern races, based upon the capacity to bear arms. It is a chaotic period, the first of which shows little respect for woman. The decline of virtue in the Roman Empire had to burn out its course; but the rise of chivalry was the restoration of the Christian conception, which in one form or another continues to make improvement.

The general contrast between modern and ancient conceptions of social life is that between the individual and the family. The individual is the legal and social centre of modern life; the family, of the ancient. In modern jurisprudence the individual is made to suffer for his own crime alone; in ancient, the family and kinsfolk were also made to suffer for the crime of a guilty member. This is important for illustrating the tendency in individualism to distribute the rights and responsibilities among a larger number than the centre of a group or community. This elevates woman above the position of a servant or of property.

The drift of rural into urban population is noticed, and is thought to endanger the family in such a way as to require correction by a re-action in the opposite direction. We think, however, that economic forces have determined this more than moral, although the latter are strong factors in the movement. Fourierism, the Oneida Community, and Mormonism do not pass unnoticed.

The last two chapters are an elaborate discussion of divorce in a very scientific manner, but with some unconsciousness of the difficulties in the way of correcting the evils of it, due to social customs which must first be amended before the problem of divorce can be solved. The causes of divorce are assigned to two classes, — general and special. The general are, (1) growth of individualism, (2) secularization of marriage, (3) change in social and political condition of woman. The special are, (1) husband's belief in ownership of wife's person, (2) property, (3) wife's failure to assume her share of the burdens of the family. The remedy lies, as the author thinks, (1) in a proper conception of a woman's responsibilities, (2) in a higher standard of belief and practice as to domestic institutions, (3) in the restoration of marriage to a religious basis, and (4) in uniformity of law as to marriage and divorce.

We will not criticise this. The subject merely suggests the remark that there is a growing tendency to make married life a commercial matter, one of the most dangerous influences that ever affected human life. On the other hand, both as a corrective of this, and as a check upon population of which Malthus may not have dreamed, there is a tendency to enfranchise woman, socially and legally, so as to make her independent of the marital relation for her support. It is not a little remarkable, that, just as population is beginning to approach the limits of its expansion by occupying all the material resources for its subsistence, the combined in-

fluence of chivalry, Christianity, and individualism should have anticipated the pressure which their occupation or exhaustion must produce by emphasizing the moral, social, and legal rights of woman, and thus confer upon society the power to exercise a check upon the terrible consequences of over-population. Evolution seems to be creating motives and an environment that will modify the effects of the most powerful of human instincts, and just at a time that will prevent the pressure from being too abruptly imposed upon civilization.

Conscious Motherhood; or, The Earliest Unfolding of the Child in the Cradle, Nursery, and Kindergarten. By EMMA MARWEDEL. Chicago, Interstate Publ. Co. 8°.

THE reviewer has a difficult choice to make with regard to the proper mode of viewing such a book as this. He is tempted, in the first place, to regard the book as a scientific contribution, and finds the justification of such a method in the fact that the psychological development of infant mind is well on its way towards assuming the character of a scientific body of truths. Regarded as such, no favorable notice can be passed upon it. It lacks throughout a systematic and symmetrical exposition: it fails to distinguish the important from the trivial, the scientifically established from the popularly supposed: it uses new words where we have good technical words in their stead, *e.g.*, 'sensoric,' 'motoric,' 'peripheric,' for 'sensory,' 'motor,' 'peripheral,' the German '*rinde*' instead of 'cortex,' and so on: it includes several rather serious blunders in stating anatomical and physiological points, and shows the mark of an 'atechnical' hand. In this sense the contribution here made is of no high order of merit, and adds little of value to our knowledge of the subject.

If, on the other hand, the reviewer asks himself the questions, "What will be the practical effect of the book?" "How does it stand as a means of propagating sound doctrines not yet universally understood?" he has the pleasanter task of finding many commendable doctrines emphatically expressed. The keynote of the volume, as indicated in its title, is to arouse mothers to a proper appreciation of their privileges and duties. Education begins in the cradle: the child is not one being in its infancy and another when it comes under school influence. There is a continuous psychical development paralleled by a physical development, taking place independently of the technical 'instruction' and based upon natural laws. These laws are to be explicitly unfolded, and are to form the guiding spirit under which the child is to be viewed and its true education directed; to reveal the all-important truth of the supreme value of these early years of life when habits far deeper than the artificial learning of later years are laid down, when the most difficult actions of life are learned, when the child is passing with lightning speed through the history of the race, epitomizing the characteristics of remote ancestors as well as of its parents. The duty of this sphere of education falls upon mothers: it is to be rescued from the hap-hazard spirit in which it is cultivated, to be made a serious occupation and not a dilettanti toy, to be recognized as the true mission of 'conscious motherhood.' The advancement of woman is to consist in the increase in dignity and importance of the duties which have in all ages fallen to her share. The appeal is a noble one; and while not always made with a full view of the many-sidedness of the problem involved, is presented in a way likely to attract the audience to which it specially addresses itself.

The author is the head of a kindergarten in San Francisco, and an enthusiastic follower of Froebel, taking from him some of his peculiar symbolism and mystic imagery. Her other altar is erected to Professor Preyer, as the representative of the modern scientific study of child-mind; and from these two lines of interest she confidently awaits the time when the relation of mother and child will be practically appreciated in all its fulness, grandeur, and importance. The offshoot which the kindergarten has sent off from the technical education will spread down to the home, there to plant the real root of a natural education. Her next greatest interest is in developing the technical side of kindergarten work; she here falls into the common error of overestimating the importance of doing things in just such and such a way to the neglect of the importance of having them done in any of half a dozen ways: her

devices are plausible, but worthless if made a ritual. What is wanted is a good teacher with a talent for adapting all methods.

So much for the original portion of the book. The second part is devoted to a *résumé* of the work of Preyer on child-mind. The work of selecting the abstracts and putting them into good English is fairly well done. Here and there the real important point is omitted, and much detail is found in its place; and the physiological portion is rarely accurately set forth. But the object of the translation is to arouse an interest in the observation of children, and in this good cause the book is a desirable aid.

Die Welt in ihren Spiegelungen unter dem Wandel des Völkergedankens. Von A. BASTIAN. Berlin, Mittler. 8°.

IN the present publication the author sets forth his ideas of the principles on which the science of ethnology must be founded. He considers ethnology the only sound basis of psychology. His arguments are these. The inductive method of science as developed in our century is founded on comparison. If psychology is to attain the same scientific character which the natural sciences have reached, the same methods must be applied. If, however, psychology is exclusively based on the facts given by our self-consciousness, it is impossible to apply this comparative method, as only a single phenomenon — our own *psyche* — is given. The first thing to be done, therefore, is to establish sound methods of psychology. The connection between physical and psychical phenomena must be studied by the science of psychophysics. The study of psychical phenomena can only be begun after an exhaustive knowledge of such phenomena has been gained: therefore it is necessary to know all ideas that exist, or have existed, in any people, at any time. These must form the material for psychical researches. He calls this method the 'statistics of ideas.' Bastian has emphasized these theories in all his recent publications, and his point of view is one of eminent importance. It cannot be said too frequently that our reasoning is not an absolutely logical one, but that it is influenced by the reasoning of our predecessors and by our historical environment: therefore our conclusions and theories, particularly when referring to our own mind, which itself is affected by the same influences to which our reasoning is subject, cannot be but fallacious. In order to give such conclusions a sound basis, it is absolutely necessary to study the human mind in its various historical, and, speaking more generally, ethnic environments. By applying this method, the object to be studied is freed from the influences that govern the mind of the student.

There are two objects of ethnological studies. The one is to trace an idea in its origin and growth and in its offshoots; but, after this has been done, the problem remains to be solved, what are the psychical laws that govern the growth of ideas in the mind that holds them? We may know the whole history of an idea, still we do not know why this idea is taken up by a certain people and developed in a certain way, or why similar ideas are found in regions widely apart. It is this branch of ethnology which Bastian has in view when he again and again emphasizes the absolute necessity of collecting what can be collected. The individuality of uncivilized nations is disappearing so rapidly that we may expect it to die out ere long. For this branch of ethnology particularly, all phenomena of the life of uncivilized nations are of the highest importance, and therefore their study must be carried on vigorously.

Bastian calls the present volume 'Prolegomena to the Statistics of Ideas.' We find in it a vast amount of material referring to the ideas of uncivilized races, and of scientific men of various epochs, on life and death, on the origin of the world, and on its end. It is accompanied by a collection of pictures illustrating these ideas.

F. B.

Naturforschung und Schule. Von W. PREYER. Stuttgart.

IN this pamphlet Professor Preyer, the noted physiologist, vigorously attacks the present educational system of Germany. His main thesis is that the *Gymnasium* — which, in spite of a few concessions, still proclaims as the necessary education for all cultured Germans a long drill in the classics, and still holds the only key to the university and the governmental posts — is an institution entirely out of date, ignoring all that enormous addition to human

knowledge which forms the pride of our civilization, and using methods that are in direct antagonism to the teachings of modern educational science. What he asks is, that the *Realschule*, where science is represented and the classics find but a small place, shall be placed on equal footing with the *Gymnasium*; that its certificate be on a par with that of the *Gymnasium* as a credential for entering the university and as a step toward official advancement. When the two systems are allowed to compete on equal terms, a healthy rivalry will give each its proper position in the educational system.

In support of this position, Professor Preyer recounts some interesting facts. In the first place, the present constitution of the *Gymnasium* is complained of. It puts too much strain on book-knowledge, on memory-cram, on non-useful accumulation of dead words, and allows no place to fresh, living facts. A very small portion (only about fifteen per cent) go through the *Gymnasium* and receive the mark of proficiency, and many of these are older than they should be. The school must be arranged so that the majority of the pupils pass the examination with credit. Their physical health suffers, as is shown very conclusively by the number of rejections for the military service. The number suffering from shortsightedness (*myopia*) is startling. Furthermore, the university professors are very rapidly coming to prefer students who have some practical training; and more than half have, in answer to a circular, expressed themselves in favor of placing the two schools on an equal footing. The students of the sciences are increasing, in recent years very rapidly; and yet the whole world of science must accept all such recognitions of its disciplinary and culture value as patronizing concessions from the powerful 'dead-word' scholars. Professor Preyer wants no concessions, but a complete recognition that the 'new education' offers a training at least as valuable, from a practical as well as a humanitarian standpoint, as the traditional schooling of Germany.

As the charge is often brought that the objectors do not state what they want, but only what they object to, the author sketches a plan of school which he regards as in harmony with the needs of modern life and the teachings of a sound physiology. "Much more time must be devoted in the schools to character-building, that is, to moral education and to physical culture, and much less to instruction, that is, memory work." First of all, he asks a thorough systematic course in the mother-tongue, so that every young man can express himself correctly and promptly, can write a satisfactory letter, and arrange what he has to say so that it is readily understood,—an accomplishment very rare among present university students. He wants a sound course in general practical ethics; a good knowledge of French and English; a drill in *Heimatskunde*, so that every German knows his own country; a careful instruction in history; a systematic training of the senses and observing powers, by drawing, by manual skill, by scientific tasks of all kinds,—mathematics, physics, chemistry, and physiology. In addition, the hygienic condition of schools and scholars should be under the official charge of a physician, whose special duty it shall be to prevent the many causes of mental breakdown now so prevalent.

The usual counter-arguments, that our culture is staked upon that of Greece and Rome, that these things are necessary for their culture-power, etc., Professor Preyer admits, as far as they mean that every opportunity should be given to study them, but entirely opposes when it is held that *all* must study them without reference to their future career. Those who believe in the 'new education' must now, like Professor Preyer, send their sons to the *Gymnasium* to spend years in (to them) comparatively useless instruction, spoiling their powers for fresh fact investigation, and then suddenly emerge in the sphere of university freedom where they attempt to forget their previous word-lore, and strive to re-adjust themselves to a new field of activity; must do this in order to secure for their sons the entry into the full privileges of the university and the governmental appointments. The removal of this restraint he regards as a national necessity, and sees the fate of Germany hanging upon its speedy adjustment to the needs of modern living.

One sees from this pamphlet that the Germans have their educational problems still to work out, and must go through bitter controversies before advance is realized, quite as much as we in

America. Our institutions are younger and more plastic: they should accordingly be in the van of the 'new education.'

M. Tulli Ciceronis Cato Major et Lælius. With an Introduction and Commentary by Austin Stickney, A.M. (Harper's Classical Series, under the editorial supervision of HENRY DRISLER, LL.D.) New York, Harper. 12°.

PROFESSOR DRISLER is laying classical instructors under great obligation to him by providing them with a series of text-books whose editors have kept always in view the practical needs of the college class-room. In so many of the editions of Greek and Latin authors lately issued from the press, both in England and this country, there is an attempt on the part of the editors to overwhelm the student with a display of erudition whose only effect is to discourage him from any attempt to search for the notes that he really needs, but which are only to be found *nantes in gurgite vasto*. In the series now publishing, however, in which Professor Stickney's volume is the seventh, the results of careful and scholarly investigation are set forth without any unnecessary and tiresome recapitulation of details, that are of course interesting to the critical linguist, but of no importance to the undergraduate, for whom these volumes are primarily designed.

Professor Stickney has, in the 'Cato Major et Lælius,' given us a companion to his excellent edition of the 'De Officiis,' and one that exhibits the same good judgment and knowledge of the needs of the class-room. The notes are admirably selected, concisely given, and amply illustrated. Of course, after what Mr. Reid has done in his masterly edition of these two treatises, one does not look for much original matter; but a great deal that Mr. Reid discusses and illuminates with the light of his own very elegant scholarship is of interest only to the critical student of Cicero, and presupposes an extensive acquaintance with that author. Professor Stickney's purpose is a different one. Conciseness is his object; and the only criticism that one can reasonably make is, that brevity is sometimes gained at the expense of strict accuracy of statement, as in the note on *quo . . . viæ* (vi. 16), where the true locative force and form are ignored in his explanation; while in the same chapter the interesting form *cedo* is passed over with a mere translation. So, too, Cicero's blundering derivation of *occatio* is allowed to stand, and the famous *viam quam . . . ingrediundum sit* is dismissed with the perfunctory remark that it is "an archaism," though any fifth-form boy of an inquiring turn of mind would feel a genuine interest in a fuller explanation.

The orthography of the book is, in the main, that of C. F. W. Müller's edition, and is consistent and Ciceronian,—a delightful contrast with that of so many school editions published in this country. The few changes which Professor Stickney has introduced are, on the whole, improvements upon the Leipzig text.

H. T. P.

Die Kunst Glücklich zu Sein. Von PAUL MANTEGAZZA. Jena. (Translated from the Italian.)

WE have recently become very much interested in the personal characteristics of eminent men. So many of us feel that the changed conditions of modern life carry with them so entire a re-adjustment of habits and views, that many of the commonly accepted guides for conduct are no longer applicable. We thus look about to see how men wiser than ourselves have solved these old yet ever new problems. A prominent magazine has recently collected short accounts of the education of living scholars. In a similar autobiographical strain they have discussed the 'objects of life,' and from what literary resources they drew most aid. Sir John Lubbock reveals his practical philosophy by discoursing upon the 'pleasures of life.'

In the above little volume the eminent Italian anthropologist, Mantegazza, expounds in a highly entertaining manner his optimistic life-philosophy. The author has no sympathy with the view that this life is a vale of tears: he believes that the good is the promotion of life. Health and morality are both life-favoring, and both lead to happiness. Practically, happiness is rare because it is hunted after too eagerly and too consciously, and not quietly enjoyed by the way; again, because it is regarded as implying the satisfaction of all wishes, while such a condition would really lead

to a state of stagnation. There is an art of being happy, a very essential part of which is the power to enjoy the little every-day comforts of living, and the absence of excessive worry about the morrow. To assure the reader that all this is not simply theory, the author plainly announces that he is happy. This is indeed a healthy optimism, and, if happiness is at all a scientific topic, the anthropologist is entitled to an authoritative voice in the matter. But one cannot escape the conviction, even in the midst of the most glowingly pictured pages, that the balmy air of Italy has allowed the poet to run away with the scientist, and that the problem of living is not so simple as we would like it to be. Be this as it may, these pages contain the very interesting observations of a very interesting man.

Winter: From the Journal of Henry D. Thoreau. Ed. by H. G. O. BLAKE. Boston and New York, Houghton, Mifflin, & Co. 12°.

THIS volume is the third that has been made of selections from its author's journal. This singular man withdrew to a great extent from the interests and the society of his fellow-men, and devoted himself to the contemplation of nature. He was a naturalist; yet there is very little of scientific interest in the volume before us. He blames men of science for giving too exclusive attention to the physical structure of animals, with too little regard for their mental characteristics and their habits of life; yet he has not much to say on these subjects himself. He was evidently more interested in the æsthetic aspect of nature than in the scientific, though he shows but little insight into the deeper poetical significance of natural objects. His remarks run largely on the trivial every-day aspects of things, such as the tracks of animals on the snow, the appearance of buds and catkins in the winter, and the bark of the yellow birch; and he goes into ecstasies over the humming of a telegraph wire, which he declares to be superior to all the poetry of antiquity (p. 106). The journal is full of complaints about the loss of early friendships, several of Thoreau's friends having become estranged from him, which he seems to have been at loss to account for. But surely a man who took so little interest in human affairs as he seems to have done could hardly expect very warm sympathy from others. The journal contains many observations on moral and intellectual matters, which are often of much higher value than the descriptions of natural objects that make up the greater part of the work. The author's delineation of the character of Washington is correct and well expressed, and he has several remarks here and there on the subject of authors and authorship which are quite interesting. Thoreau's style is generally clear and refined, both in descriptive and in reflective passages; and if he had had a higher purpose in life, and more interest in the affairs of men, he might have been an eminent author.

Natural Law in the Business World. By HENRY WOOD. Boston, Lee & Shepard. 16°.

THE author of this work is a practical business-man, and writes throughout from a practical point of view. He disclaims all pretension to scientific profundity, yet he shows a clear grasp of scientific principles and of their relations to the business world. He speaks of his work as "an honest attempt to trace out the working and application of natural law, as it runs through the economic and social fabric, in a plain and simple manner" (p. 5). The attempt, we think, is in the main successful. The author's style is direct and clear, and his method of treatment better fitted to win the attention of practical but unscientific minds than the method of the regular economists.

The main thesis of the book is the supremacy in industry of the law of supply and demand, and the necessity of adherence to this law as a condition of industrial prosperity. Many other subjects, however, are treated in the various chapters, which cover a wide range of topics. Mr. Wood is strongly opposed to labor combinations, partly because of their antagonism to capital, and partly because they are sometimes unjust to non-unionists, and because, as he thinks, they unduly restrict the individual freedom of their own members. In condemning them so strongly as he does, we think he goes too far, for he seems to have judged them almost exclusively by their bad side, without regard to the benefits which may

and often do result from them. He shows, however, a lively interest in the laborers themselves and a strong desire for more harmonious relations between them and their employers. He emphasizes the fact that brain labor is more important than muscular labor, a fact that is too often overlooked by labor agitators; but he honors honest labor of every kind, and declares that labor is a blessing, and not a curse. Socialism, of course, meets with Mr. Wood's unsparing condemnation, and he looks with little favor on any species of State interference. The chapters on the unequal distribution of wealth, on dependence and poverty, on the railroad system, and on the management of corporations, are well considered, and worthy of perusal by both laborers and capitalists. The book is now issued in cheap form, with paper covers, and deserves a wide circulation.

NOTES AND NEWS.

THE twentieth annual meeting of the Kansas Academy of Science was held in the Capitol Building, Topeka, Oct. 26, 27, 28, 1887. There was an excellent attendance of members, but the local attendance was not quite equal to that of last year. The capital has too many things in the way of meetings, etc., so the citizens become a little weary. The papers read were unusually valuable. The Academy of Science is growing. The annual meeting next year will be held in Wichita in October. The following is a list of the papers read: address of the retiring president, Rev. John D. Parker, on 'Progress in Astronomy'; Lucien J. Blake, 'Practical Electricity and the Laws of Energy'; H. W. Everest, 'The Utilization of Mental Power'; Robert Hay, 'The Lignite of the Kansas Dakota,' and 'Notes on Salt in Kansas'; W. R. Lighton, 'On the New Coal-Shaft at Leavenworth'; F. H. Snow, 'Fossil Flora of the Kansas Dakota,' and 'A List of the Fauna and Flora of the Kansas Coal-Measures'; D. S. Kelly, 'Notes on Fossil Elephas from Morton County'; Joseph Savage, 'A Fossil Deposit at Garden Park, Colorado'; E. H. S. Bailey, 'On the Recently discovered Ellsworth Salt-Beds'; Robert Hay, 'Notes on Building-Stones in Kansas'; N. S. Goss, 'On the Nesting of the Mississippi Kite and Snowy Plover in Central-Southern Kansas,' 'Notes on the Yellow-Tailed Cassiques,' and 'Feeding-Habits of the White Pelicans'; F. H. Snow, 'Notes on the Purslane-Worm (*Copidryas Gloveri*)'; W. Knaus, 'Notes on *Calopteron reticulatum* Fab.'; Charles R. Carpenter, 'On the Black Rot of the Grape'; Mrs. A. L. Slosson, 'Personal Observations on the Kansas Flora'; F. H. Snow, 'The Desmids of Kansas'; W. A. Kellerman, 'Some New or Little-Known Kansas Plants'; L. E. Sayre, 'Report of Further Observation on the Loco-Weed,' and 'The Resin of *Silphium laciniatum* (Rosin-Weed)'; W. R. Lighton, 'Notes on the Circulation of the Sap'; J. T. Lovewell, 'Alcohol in Temperance-Drinks'; T. H. Dinsmore, 'Should Malt be considered an Intoxicant?' and 'On the Effect of Oxygen on Animal Life'; E. H. S. Bailey, 'On the Relation between Taste and the Acidity of Certain Acids'; L. E. Sayre, 'The Action of Chromate of Lead upon the Gastric Fluid'; T. H. Dinsmore, 'Color-Blindness in the State Normal School'; J. T. Lovewell, 'Further Studies on the Rainfall in Kansas'; F. H. Snow, 'Rain Cycles in Kansas'; George E. Curtis, 'Weather-Predictions in the United States'; T. B. Jennings, 'Needs and Utility of the Kansas State Weather-Service'; George B. Curtis, 'The Exposure of Meteorological Instruments,' and 'Chimney-Hoods'; W. S. Franklin, 'Continuation of Some Studies of Lissajous Figures.'

— The steamship 'Hondo' sailed on Wednesday, Nov. 30, with the Nicaragua Canal Association's survey expedition. The work will be in immediate charge of E. S. Peary. The instructions issued by Chief-Engineer Menocal are very minute. The *Engineering News* says that five parties will be organized. First the survey by all the parties of the north-eastern section of the canal, with special attention to Greytown Harbor, is contemplated, estimated to take three months' time, when most of the parties are to be moved over to the comparatively short western section. The important detail of boring to ascertain the nature of the material is not to be neglected. The present idea is that six to nine months in all will cover the work of preliminary location enough to base tolerably exact estimates on.

—The annual meeting of the American Society for Psychical Research was held in Boston last week. After the opening remarks, Dr. Minot introduced Prof. H. P. Bowditch, who presented the report of the committee on thought transference. "Among the conditions possibly favorable to thought transference, supposing it to be a genuine phenomenon, the effect of a sudden and unexpected impression made on the mind of the agent seemed particularly worthy of investigation. For this purpose experiments were made in which a brilliantly illuminated figure or diagram could be suddenly displayed to the agent while sitting in a darkened room. The chairman of this committee, Mr. Hodgson, and Dr. W. S. Bigelow took part in these experiments, which were twenty or thirty in number, and conducted on different days in the month of July last. As absolutely no evidence of thought transference was obtained, the details of the experiments may be omitted. The suggestion made in the last report of this committee, that a drug might be discovered which by its action on the cerebral centres might favor thought transference, seemed also worth testing. For this purpose experiments were tried, with Mr. Hodgson acting both as agent and percipient while partially under the influence of ether, but the results differed in no respect from those obtained when he was in the normal state." In some other experiments made by Mr. Hodgson, Professor Bowditch added, there was a degree of success which warranted a continuation of the investigation. "It will be evident to those who have followed the work of the American Society thus far, that the attempt to obtain evidence as to the reality of 'thought transference' has been attended with very meagre results. If thought transference be a genuine psychological phenomenon, it is evident that the conditions favorable to its manifestation are not generally understood. Judging from our experience thus far, it would seem that an inquiring attitude of mind is certainly not one of these favoring circumstances." Other interesting reports to which the audience listened were those of the committee on experimental psychology, by Dr. Minot; the committee on apparitions and haunted houses, by Prof. Josiah Royce; the committee on hypnotic phenomena, by Mr. Charles B. Cory; and the committee on mediumistic phenomena, by Dr. W. N. Bullard.

—The reports of M. Larrieu, late missionary in China, who maintains that the great wall of China has never existed (*La Grande Muraille de Chine*, Paris, 1887), has been widely spread by the American daily papers. He claims that the wall consisted merely of watch-towers, built of earth and bricks, about twenty-five feet high and a thousand feet apart. In a few places they were connected by an embankment. He also says that the wall north of Peking and the palisades west of Sian-tung never existed. These views cannot be correct, as numerous travellers have seen the wall or its ruins. In regard to the palisades of Sian-tung, H. E. M. James, who recently visited Manchuria, says that at the present day they have disappeared entirely, though a mound or row of trees occasionally marks the place where they stood. The gateways, however, he found still maintained as customs-posts, at which transit duties are levied. Undoubtedly the wall consisted in many parts of earth, but there is no reason to maintain that it never existed.

LETTERS TO THE EDITOR.

* * * Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.
Twenty copies of the number containing his communication will be furnished free to any correspondent on request.
The editor will be glad to publish any queries consonant with the character of the journal.

Rock Specimens from Cumberland Sound, Baffin Land.

THE following specimens were collected by Mr. W. Whiting of the whaling-station of Messrs. Williams & Co., New London, Conn., on Umanaktuak, an island on the south-west coast of Cumberland Sound. The specimen No. 10 was found by an Eskimo on a hunting excursion, and sold as a curiosity to Mr. Whiting, from whom I received the specimens for examination.

1. *Boulder from the Bed of a Torrent Umanaktuak*.—Compact limestone, almost black, and somewhat argillaceous. It weathers dark gray, and shows on the surface slightly projecting, fine, parallel lines of stratification from one-quarter to one-half an inch apart. No trace of fossils can be detected, either by inspection

or in microscopic sections. Under the microscope it is seen to consist of gray, rounded, fine calcareous grains with a few black ones, all apparently deposited from water.

2. *South-west Corner, Umanaktuak*.—Graphite with rusty surfaces, and holding drusy white quartz.

3. *Same Locality*.—A decomposing black crystalline rock, which, on microscopic examination, proves to consist of graphite, with hornblende, a triclinic felspar, and a little quartz. It breaks into angular fragments along thin layers of graphite, which are sliken-sided, and give each one the appearance of a piece of this mineral alone.

4. *Little Hill (Kagodloaping), Umanaktuak*.—Hornblendic gneiss, of a rather coarse 'pepper-and-salt' appearance, consisting of about equal parts of quartz and felspar, forming the white portion, and of black hornblende with smaller quantities of brown mica, the dark.

5. *Big Hill, Umanaktuak, High Level*.—Light gray gneiss of medium texture, composed of about equal parts of orthoclase and quartz, with a subordinate proportion of fine scales of black mica. Occasional crystals of the felspar are much larger than the rest.

6. *Big Hill, Umanaktuak, Shore Line Eastward*.—Gray gneiss, consisting of layers of mixed orthoclase and quartz, alternating with others composed of scales of brown mica.

7. *Umanaktuak*.—Rusty mica-schist of medium texture, the quartz in small proportion.

8. *Vein in Umanaktuak*.—Translucent white vitreous quartz having exactly the appearance of alum.

9. *Umanaktuak*.—White rather coarsely crystalline felspar and quartz, with a few small scales of white mica, being a very light-colored variety of granite, apparently from a small vein.

10. *About 40 Miles Inland, in a South-Westerly Direction from Umanaktuak*.—Foliated graphite with rusty surfaces and partings.

11. *Umanaktuak*.—Vitreous translucent gray quartz with thin plates of brown mica traversing it in different directions.

These specimens indicate the ordinary Laurentian system, and are of much the same character as on the north side of Hudson Strait, where the rocks appear to be allied to those of the lower Ottawa valley, and to be somewhat nearer and more modified than the great mass of the Laurentian in the Hudson Bay territories.

Dr. ROBERT BELL,

Assistant Director Geological Survey of Canada.

Ottawa, Nov. 28,

'Eskimo and the Indian.'

I WISH to add my voice to emphasize Dr. Boas's criticism of the method employed in Mr. Chamberlain's article with the above title. Though I should be sorry to hurt Mr. Chamberlain's feelings, I am obliged to say that there has been a great deal too much of the same sort of work done, and erroneous comparisons of this kind seem particularly alluring to those who attempt the study of the comparative philology of American languages on a large scale.

One reason for these errors is not far to seek. They of course are obliged to work with the published vocabularies of the Eskimo language. Now, as they have no knowledge of this language (and the number of those who have even an elementary knowledge of it, outside of the Danish settlers in Greenland, might almost be counted on the fingers), they are entirely unable to realize how bad most of those vocabularies are phonetically. Even the best of these, Dr. Rink's lately published comparative list of stem-words (see Dr. Boas's article in *Science*, Dec. 2), is written in the modern Greenlandic alphabet, which, in my opinion, masks many important phonetic relations, and they seem to have a sort of fatal instinct for getting hold of the oldest and least phonetic vocabularies. This is specially evident in Mr. Chamberlain's list of words. Dr. Boas has sufficiently disposed of the first table, but to show how misleading such things are, I have taken the trouble to go through his second list, taking such words as can be recognized as Eskimo words at all, and showing how their resemblances to the Indian words are due to a misapprehension of the real sound of the words. In expressing the sounds phonetically, I have used the alphabet employed by the Bureau of Ethnology in writing Indian languages, as the one with which I am most familiar. I think it will be sufficiently intelligible.

1, *hrownik*, 'bone,' is the well-known Eskimo word *sauneq* (the initial *s* is perhaps merely an aspirate in some parts of the central region).

2, *anayva*, 'brother,' is a misprint or misquotation of *añayoa* of Father Petitot's Mackenzie vocabulary. This means 'his elder brother,' being the well-known *añayo* (Greenland spelling, *angajo*) with the so-called suffix.

3, *tchene-yoark*, 'do,' is phonetically *tceneyoaq*, the regular Mackenzie dialectic variant of *sanavog*, 'he works.'

4, *anyark*, 'day' (Mackenzie), is a misprint for *anyapk*, defined by Petitot as 'jour long.'

5, *tschintak*, 'ear' (Tchuktschi = Asiatic Eskimo), is an evident error for *siuta*, 'his ear.' In this case the correction makes the comparison a little better, for the words compared at least begin with the same letter.

6, *atta*, 'father,' is the baby-word *atata*, *adada* (perhaps the same as 'daddy').

7, *aihanka*, 'fingers,' is probably a Reindeer Chukch or Siberian word.

8, *oonoktook*, 'to burn,' is a well-known compound of which the stem-word is *uvoq*.

9, *akseit*, 'foot' (hand), is properly *axcail* (Greenland spelling, *arssail*), which appears in the other dialects as *aggait*, *adrigai*, etc.

10, *ayunilork*, 'good' (Mackenzie), is really a compound, *ayunil-sog*, 'not bad' (Greenland spelling, *ajungitsok*).

11, *eshet*, 'hand' (Kadiak), is evidently *arssail* again.

12, *kakkairar*, 'lip' (Mackenzie), is meant for *kakkiviap* of Petitot's vocabulary, which is a well-known compound of *kakik*.

13, *anaha*, etc., 'mother,' is evidently another well-known baby-word, *anana*, sometimes *amama* (really, I think, *mama*).

14, *chinga*, 'nose' (Tchuktschi), is *qingá*, 'his nose,' of all the dialects. (The initial sound is perhaps nearer to *k*, though a well-marked guttural.)

15, *annu*, *annju*, 'snow,' should probably be *anigo*.

16, *ukshiok*, *uktschuk*, 'winter,' is *ukioq* in at least five other dialects.

17, *aganak*, 'woman,' loses all resemblance to *ekening* in the forms in which it is usually seen, *axnaq*, *añna*.

Thus I have shown that out of twenty-five comparisons, at least seventeen depend on a total misapprehension of the pronunciation or meaning of the words for even the "fortuitous coincidences of sound" alluded to by Boas.

I must, however, do Mr. Chamberlain the justice to say that his remarks about the possibility of the Eskimo name for copper having been derived from the language of the Indians from whom they obtained the copper, are certainly suggestive. The Greenlandic word for copper is *kangnusak*, which is much more like *kanadzia* than the words used for comparison by Mr. Chamberlain, and this word is called a stem-word, *i.e.*, nothing is known of its etymology. Such a case is, however, of no value in arguing any relationship between the two languages.

JOHN MURDOCH.

Smithsonian Institution, Dec. 3.

The Eskimo Tribes.

I HAVE just read with great interest the notice by Dr. F. Boas (in *Science* of Dec. 2) of Dr. Rink's latest work. Dr. Boas has to a certain extent anticipated my own intentions, as I had already handed in to the publishing committee of the Washington Anthropological Society a somewhat lengthy review of the same work for publication in the first number of the new periodical which that society is about to publish. I have, however, discussed the subject in much greater detail than would be suitable for the columns of *Science*, and therefore venture to believe that my paper has not been rendered superfluous even by Dr. Boas's excellent article.

I am glad to find that Dr. Boas agrees, in the main, with the conclusions I had arrived at myself, though I have had the boldness to carry further than he has done the theory of the dispersion of the Eskimo race on this continent. In my discussion of Dr. Rink's arguments, there were so many points of interest that the question of Indian influence entirely escaped my attention, so that I am much pleased to see that Dr. Boas has presented this side of the question. A somewhat detailed study of the arts of the Western Eskimos leads me to agree entirely with his opinion.

I am strongly inclined to believe, though the evidence is not yet complete, that the use of the birch-bark canoe by some of the Eskimos on the Alaskan rivers, which Dr. Rink believes is an evidence of their primitive culture, is simply an adoption of the habits of their Indian neighbors, induced by the fact that where they live it is easier to obtain birch-bark than sealskins. Though it is by no means unlikely that, as Dr. Rink believes, the Eskimo skin-boat is descended, so to speak, from a birch canoe, I do not believe that the canoes just mentioned are in the same line of descent.

Dr. Boas's view of the condition of the Eskimos before their separation into their present divisions seems to me highly probable, though I think a little more study will enable us to add to it considerably.

I have already at hand nearly enough linguistic material to prepare a good-sized list of the animals that must have inhabited the original home of the Eskimos.

In conclusion, I most heartily concur in Dr. Boas's opinion that Dr. Rink's work will be highly appreciated by all ethnologists. It certainly deserves to be.

JOHN MURDOCH.

Smithsonian Institution, Dec. 3.

Queries.

19. WHO FIRST SAID IT?—The very interesting discovery announced by Professor Trowbridge, that birds have a power of sleeping on the wing, brings to mind that it is not a recent observation, but was anticipated by a very astute philosopher and poet, Edgar A. Poe. In a poem which he says was written in his youth, and published more than thirty years ago, are these lines:—

"O is it thy will
On the breezes to toss?
Or capriciously still
Like the lone albatross,
Incumbent on night
(As she on the air)."

To which he appends this marginal note: "The albatross is said to sleep on the wing." This poem, however, was criticised by another philosophic writer, 'John Phoenix,' who gave it as his opinion that the poet invented the fact in natural history because he found there were no words to rhyme with 'toss' but 'hoss' and 'albatross.' This is now happily discredited; but the question remains, Who first "said it"?

Clinton, Io., Nov. 26.

P. J. F.

Answers.

18. METEOR-FALL.—In reference to the query "Was the Amsterdam meteorite a hoax?" the following from the Amsterdam *Democrat* of Nov. 19 explains it in fewer words than perhaps I can: "A man came down from Fort Hunter this morning to see the 'aerolite.' A meteorologist from Troy arrived in town to-day, having come in haste without his dinner, and was much disappointed when told that the 'aerolite' was a hoax. It is also stated that a party are on their way hither from Philadelphia. A big stone did fall in the place indicated. The only trouble is, instead of falling from the sky, it fell from a wagon, which was loaded and broke down with it, that's all, but it rather spoils the sensation." Newspaper statements report that on Aug. 30 a meteorite had been seen by a number of people on Main Street between Howard and Milk Streets, Spokane Falls, Wash. Ter. It was said to have struck the electric wires, cutting one of them in two. It was described to be a ball of fire ten feet in diameter. This proved to be nothing but the crossing of the electric light wires, which resulted in the melting of one of them. On the evening of Nov. 7 a large meteor shot over St. John's University, St. Cloud, Minn., and descended within two miles of the University. A vigorous search was made by professors and students, but no trace of the meteorite was found. It was concluded by all that it had fallen in the lake, in the direction of which the meteor had passed. The many sensational accounts of meteoric falls at Wellsburg, N.Y., Evansville, Ind., the Georgia metal ball, etc., are all the productions of a so-called reporter's fertile brain.

GEORGE F. KUNZ.

New York, Dec. 5.